

Samuel L. Foley, Ph.D.

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POSITIONS

Postdoctoral Researcher

Johns Hopkins University
Research Group of Professor Margaret Johnson, Biophysics Department

July 2023 – Present
Baltimore, MD

EDUCATION

Carnegie Mellon University

Ph.D. in Physics
Advisor: Markus Deserno

Thesis: Mechanics and Thermodynamics of Differentially Stressed Lipid Membranes:
Theory and Coarse-Grained Simulation

Pittsburgh, PA
May 2023

M.S. in Physics

May 2020

Pennsylvania State University

B.S. in Physics, with Honors and Highest Distinction
Minors: Mathematics, Spanish

University Park, PA
May 2016

PUBLICATIONS

Journal Articles

4. **Foley, S. L.** & Deserno, M. Asymmetric Membrane “Sticky Tape” Enables Simultaneous Relaxation of Area and Curvature in Simulation. *The Journal of Chemical Physics* **160** (2024)
3. **Foley, S. L.**, Varma, M., Hossein, A. & Deserno, M. Elastic and Thermodynamic Consequences of Lipid Membrane Asymmetry. *Emerging Topics in Life Sciences* **7**, 95–110 (2023)
2. **Foley, S. L.**, Hossein, A. & Deserno, M. Fluid-Gel Coexistence in Lipid Membranes under Differential Stress. *Biophysical Journal* **121**, 2997–3009 (2022)
1. **Foley, S. L.** & Deserno, M. Stabilizing Leaflet Asymmetry under Differential Stress in a Highly Coarse-Grained Lipid Membrane Model. *Journal of Chemical Theory and Computation* **16**, 7195–7206 (2020)

Book Chapters

1. **Foley, S. L.** & Deserno, M. Quantifying Uncertainty in Trans-Membrane Stresses and Moments in Simulation. *Methods in Enzymology*. In Preparation (2024)

TEACHING

Carnegie Mellon University

Graduate Teaching Assistant

- Physics I for Engineering Students (Mechanics & Thermodynamics) Fall 2017, Spring 2018, Fall 2018
- Physics I for Science Students Fall 2022
- Physics II for Engineering Students (E&M) Spring 2021, Fall 2021, Spring 2022
- Physics for Future Presidents (Non-STEM Majors) Fall 2019

SERVICE

- Reviewer: JHU Office for Undergraduate Research Provost's Undergraduate Research Award Fall 2023
- CMU Physics Graduate Admissions Committee Spring 2020

AWARDS

- Physics Department Teaching Award (Carnegie Mellon) 2021–2022
- ARCS Scholarship (Achievement Rewards for College Scientists) 2017–2020
- Graduate Student Assembly/Provost Conference Travel Award (Carnegie Mellon) 2019
- Bert Elsbach Honors Scholarship in Physics (Penn State) 2014
- Penn State-New York Times Civic Engagement Speaking Contest Finalist 2013

PRESENTATIONS

- *Nano-Scale "Sticky Tape" Stabilizes Open-Edge Boundary Conditions in MD Simulations of Asymmetric Membranes* Dec 2022
Talk: APS MAS22 Meeting
- *Liquid-Gel Coexistence in Membranes under Differential Stress* Feb 2022
Poster: Biophysical Society Annual Meeting
- *Asymmetry and Phase Coexistence: From van der Waals to Lipid Bilayers* Nov 2021
Talk: Plots and Scotch (CMU Biophysics Seminar)
- *Stabilizing Leaflet Asymmetry in a Highly Coarse-Grained Lipid Membrane Model* Feb 2021
Poster: Biophysical Society Annual Meeting
- *Stabilizing Leaflet Asymmetry under Differential Stress in a Highly Coarse-Grained Lipid Membrane Model* Nov 2020
Talk: Plots and Scotch (CMU Biophysics Seminar)
- *Properties of Asymmetric Membranes from Coarse Grained Molecular Dynamics Simulations* Feb 2020
Poster: Biophysical Society Annual Meeting
- *Extending a Highly Coarse-Grained Lipid Model to Asymmetric Membranes for MD Simulations* March 2019
Poster: Biophysical Society Annual Meeting

TECHNOLOGY

High-Performance Computing

Experience with a multi-node 328-core computing cluster utilizing **Ubuntu Server**, **SLURM Workload Manager**, **OpenMP** and **MPI** parallelization.

Programming Languages

C++, **Python**: Used extensively for simulation and data analysis

Java, **Lua**, **MATLAB**: Some experience

HTML, **CSS**, **JavaScript**, **PHP**: Basic knowledge